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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/076,925

02/14/2002

Brian C. Banister

LSI-005-CIP

3966

7590

11/28/2005

Jaquez & Associates  
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EXAMINER

GHULAMALI, QUTBUDDIN

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/076,925	BANISTER, BRIAN C.	
	Examiner	Art Unit	
	Qutub Ghulamali	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 September 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 11-14 and 20-31 is/are rejected.
- 7) ☒ Claim(s) 5-10, 15-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

1. This Office Action is responsive to applicant's Amendments/Arguments filed on 09/12/2005.

### *Response to Amendmentss/Arguments*

2. Applicant's remarks/arguments, pages 9-13, filed 09/12/2005, in response to the Office Action of June 8, 2005, with reference to rejection of claims 1-4, 11-14 and 20-31, under 35 USC 102(a) and 35 USC 103(a), has been fully considered but is not persuasive. The applicant's argument that (in light of the amendment) Gerlach, does not disclose or teach "weight vector perturbation vector" and "measuring signals transmitted in accordance with multiple weight vector perturbation (modifying)".

The Examiner's response - The examiner contends that the prior arts to Gerlach and Harrison, very clearly discloses limitations of claims 1-4, 11-14 and 20-31. The examiner respectfully would like to draw applicant's attention to Gerlach (page 150, column 2, paragraphs 1-4; page 151, column 1, paragraphs 1, 2) clearly disclosing a transmitter and receiver environment wherein the transmit antenna transmits and the adaptive receiving antennas receive the complex vector array. On page 151, in Gerlach, exposure is also made to the probing os signals transmitted from the transmitter from which estimates are made of arrays excited in turn by several probing signals and each receiver measures (as would be obvious to a person of ordinary skill in the art) the relative complex amplitude response of each signal meaning that the

“measurement” in the receiver is not a mere stipulation of embodiment but rather resulting from application of the complex signals presented to the receiver in the form of entries of the probing response matrix which is than feedback to the transmitter as complex data amplitudes.

As per applicants assertion, with reference to weight vector perturbation, Gerlach discloses that noise corrupted probing responses that the transmitter identifies are perturbed in kind and not just the weight vectors as shown on page 151, col. 2 and page 152, col. 1.

Based on disclosed information the examiner firmly believes that Gerlach clearly addresses the claimed limitations recited in claims 1-4, 11-14 and 20-31. The claim rejection is, therefore, maintained.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 11-14, 20-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Gerlach et al (IEEE Signal Processing Publication).

Regarding claims 1, 2, 29-31, Gerlach discloses a method of applying overlaid perturbation vectors for gradient feedback transmit antenna array adaptation in a communication system, wherein the communication system includes a transmitter (base) and a receiver (mobile), and wherein the transmitter includes a plurality of antennas, comprising:

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- (a) overlaying at least one weight vector perturbation vector (page 150, column 1, paragraph II; column 2, paragraphs 1-4; page 151, column 1, paragraphs 1, 2).
- (b) measuring signals transmitted in accordance with multiple weight vector perturbation vectors during a measurement interval, wherein the measurement interval has a greater duration than a feedback interval (page 152, column 1 paragraph 1);
- (c) generating a feedback based on the measurements of act (b) (page 152, column 1 paragraph 1);
- d) determining a new weight vector perturbation vector based on the feedback generated in the act (c) (page 151, column 1); and
- (e) returning to the act (a) (page 151, column 1).

Regarding claim 4, Gerlach discloses measurement interval is approximately 2 times the feedback interval (page 152, column 2, section IV).

Regarding claim 11, Gerlach discloses independently adjusting a first perturbation size that is applied at transmission during a measurement interval and a second perturbation size applied as an update to a tracked weight vector (page 152, column 1, section IV).

Regarding claim 12, Gerlach discloses lagged feedback through utilization of multiple indices (page 150, column 2, section II).

Regarding claim 13, Gerlach discloses a first and a second index (page 150, column 2, section II).

Regarding claim 14, Gerlach discloses the second index represents one of two states, wherein a first state represents "before feedback received" and a second state represents "after feedback received" (page 151, column 1, section II).

As per claims 20-23, Gerlach discloses feedback consists of 1, 2, 3, 4 and multiple bits (see page 152, section IV).

Regarding claims 24 and 28, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claimed above and therefore, it would have been obvious, considering the aforementioned rejection for the methods claims 1 and 24.

With reference to claims 25-27, Gerlach discloses updating weight vectors in the preferred, positive, inverse (negative) direction (page 151, section III).

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerlach et al (IEEE Signal Processing Publication) in view of Harrison et al (US Patent 6,434,366).

Regarding claim 3 Gerlach discloses all limitations to claim 1, but is silent regarding a DS-CDMA system. Harrison in a similar field of endeavor discloses the communication system comprise a DS-CDMA communication system. It would have been obvious to one of ordinary skill at the time the invention was made to use a DS-CDMA communication system as taught by Harrison in the system of Gerlach so that the system capacity can be increased.

*Allowable Subject Matter*

7. Claims 5-10, 15-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014. The examiner can normally be reached on Monday-Friday from 8:00AM - 5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QG.  
November 23, 2005.

  
JEAN B. CORRIELUS  
PRIMARY EXAMINER

11-23-05